

REMARKS

Claims 54 – 87 are currently pending. The Examiner has rejected claims 54-87 based upon a new ground of rejection, i.e., a new reference. More particularly, the Examiner has rejected claims 54, 57-59, 61-62, 65, 75, 78-79, 82-83, and 86 as obvious under 35 USC 103 based on applicant's admitted prior art (FIG. 8) made in view of Brungart. Applicants respectfully disagree. While Brungart discusses the possibility that incorporating the source to ear distances in sound pressure level calculations may be important for the near field, it makes no suggestion that customized localization cues can be generated by using near field distance information in conjunction with an HRTF measured at a more conventional distance. Hence, Brungart itself or in combination with the referenced prior art fails to teach or suggest all elements of claim 54.

In further detail, Brungart teaches that the head-related transfer function (HRTF) is essentially independent of distance beyond a meter. Brungart contrasts the near field where interaural intensity differences (IID's) increase dramatically as distance decreases, while interaural time delays (ITD's) remain constant. (page 1 of 9).

While recognizing that the far field model may be inappropriate in the near-field region, Brungart fails to make any teaching or suggestion as to how use known HRTF data for the far field to account for changes in the localization cues in the near field. Instead, Brungart laments the fact that there exists no published data for HRTF's in the near field (conclusion, page 8 of 9). Rather than suggesting that accurate localization cues for the near field could be derived from the HRTF for the far field by applying different near field gain factors to each of the two channels, as recited in claim 54, Brungart teaches away from this concept by suggesting that new spectral shaping is required: "The spectral shaping caused by the head and pinnae may also change as the source enters the physical acoustic near-field and the curvature of the sound field increases" (page 2 of 9, 3rd paragraph). There is no teaching or suggesting in Brungart or any other cited prior art of the adjustments to the signal being based on two different distances.

Thus, for at least these reasons, Brungart in conjunction with the admitted prior art as to conventional HRTF filtering fails to teach or suggest all of the limitations of claim 54. Claims 66, 75, 83 and 86 are independent claims containing similar limitations and are allowable for at least these same reasons.

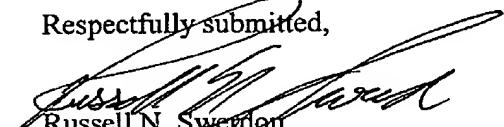
These differences are important in many cases, including for example providing more accurate near field intensity levels in an efficient processing device. More particularly, measuring new HRTF's at near field distances as suggested by Brungart consider considerable labor and storage requirements for the multitude of new measurements. In contrast, using the inventive technique, an HRTF measured for a reference distance, for example 1.0 m, can be used to accurately simulate the near field (a distance less than 1.0 meter) by applying the gain modifications recited in the claims without resorting to an HRTF library for each azimuth, elevation, and distance combination. Hence using the inventive technique can use a much-reduced library of HRTF's to accomplish the desired result. This example is merely illustrative of one advantage and does not limit the scope of the claims.

As such, applicants believe that none of the references, either alone or in combination, teach or suggest all of the limitations of the independent claims. Claims 55-65, 67-74, 76-82, 84-85, and 87 are dependant claims and are submitted to be allowable for at least their dependencies from an allowable claim. Moreover, the dependent claims recite additional limitations, and are therefore allowable for these reasons as well. Further discussion of these distinctions is believed unnecessary in light of the distinctions discussed above relative to the independent claims.

Conclusion

Accordingly, it is submitted that all issues in the Office Action have been addressed, and withdrawal of the rejections is respectfully requested. Applicants believe that this application is in condition for allowance, and respectfully request a prompt passage to issuance. If the Examiner believes that a telephone conference would expedite the prosecution of this application, he is invited to contact the Applicants' undersigned attorney at the telephone number set out below.

Respectfully submitted,



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